

**Fish and Fish Habitat Inventory
for
Operational Areas
Fulton River Watershed
in the Tanglechain IRM Unit:
CP 416**

Prepared by

**SKR Consultants Ltd.
Smithers, B.C.**

for

**Houston Forest Products Ltd.
Houston, BC**

June 1998

Disclaimer

The Province has not accepted the contents of this product for the purposes of the Forest Practices Code, and reserves the right to dispute the validity of summarized results. The province does not necessarily agree with the classification assigned to any individual stream reach, for use in logging plans, silviculture prescriptions or any other application.

Project Summary Sheet

Project Reference Information

MELP Contract Number	CSK 3070
FDIS Project Number	none
MELP Region	Skeena Region (06)
FW Management Unit	06-08
DFO Subdistrict	Prince Rupert (8)
Forest Region	Prince Rupert
Forest District	Morice
Forest Licensee	Houston Forest Products
First Nations Claim Area	Lake Babine Nation

Watershed Information

Watershed Group	Babine River
Watershed Name	Fulton River
Watershed Code	480-6972
UTM at Mouth	9.6079110.685874
Watershed Area	3900 km ²
Stream Order	5
NTS Maps (1:250,000)	93L
TRIM Maps	93L098
BEC Zone	SBS mc ²

Sampling Design

Number of Reaches Sampled	7
Total Sample Sites	9
Field Sampling Dates	Sept. 18, 1996 and July 12, 1997
Fish Species in Watershed	CH, CO, SK, KO, CT, PK, RB, MW, LW, DV, BB, CSU, NSC, LT, CC, PMC, LT

Table of Contents

Disclaimer	i
Project Summary Sheet.....	ii
Table of Contents	iii
List of Figures.....	iv
List of Appendices.....	iv
Acknowledgments	iv
1.0 INTRODUCTION.....	1
2.0 STUDY AREA.....	1
2.1 Location	1
2.2 Access.....	1
2.3 Resource Use	4
3.0 METHODS	4
3.1 Literature Review	4
3.2 Reach Break Identification.....	5
3.3 Stream Assessment	5
3.4 Map Production	5
4.0 RESULTS AND DISCUSSION	5
4.1 Tanglechain Creek Tributary	7
4.1.1 Unnamed Creek (480-6972-334-544)	7
<i>Reach 1</i>	7
<i>Reach 3</i>	8
4.1.1.1 Unnamed Creek (ILP 02008)	8
<i>Reach 1</i>	9
<i>Reach 2</i>	9
<i>Reach 3</i>	10
<i>Reach 4</i>	10
4.1.1.2 Unnamed Creek (ILP 02007)	11
<i>Reach 1</i>	11
5.0 SUMMARY OF RECOMMENDATIONS FOR STREAM RESAMPLING	12
5.1 CP 416-4 and CP 416-17	12
6.0 REFERENCES.....	13

List of Figures

Figure 1. 1:250,000 NTS map (93 L) indicating the general location of the study area.3

List of Appendices

APPENDIX 1 - SITE CARDS.....	14
APPENDIX 2 - 1:20,000 TRIM MAPS	35

ACKNOWLEDGMENTS

This inventory project was funded by Forest Renewal B.C., and the contract was administered by Deidre Quinlan. Field work was conducted by Ron Saimoto, Mark LeRuez, Matthew Jessop, Greg Tamblyn and Todd Johnston. Data entry was completed by Todd Johnston, Mark LeRuez, Regina Saimoto and Matthew Jessop. Mark LeRuez completed the draft mapping, and digital mapping was conducted by Western Geographics Information System Inc. Draft reports were completed by Regina Saimoto, and reviewed by Ron Saimoto. Quality control checks were conducted by Mark LeRuez and Regina Saimoto. Krista Morten, Cyril Thacker, Melissa Todd, and Paul Giroux provided helpful editorial comments on the drafts of the report.

1.0 INTRODUCTION

The study area is located in the Fulton watershed of the Babine drainage in north-central British Columbia (Figure 1). Selected streams in the area were inventoried for Forest Practice Code (FPC) stream classification and evaluation of requirements for appropriate management of stream/wetland riparian zones related to cutting permit CP 416. Streams in the area were previously sampled in the fall of 1996 (SKR 1997), but sampling results were inconclusive in documenting fish presence or absence of stream adjacent to or in CP 416-12, CP 416-13, CP 416-16, CP 416-17, and CP 416-24. Consequently, stream classification could not be conclusively assigned until re-sampling precluded the seasonal use of fish habitat by fish species identified in the Forest Practices Code (FPC).

The main objectives of this project were:

- to conduct re-sampling at 2 reaches to confirm fish absence or identify seasonal use of fish habitat,
- to conduct fish inventory at 3 reaches that were not previously inventoried,
- to describe management concerns for stream/wetland and lake riparian zones that are not adequately protected by the minimum standards of the FPC, and
- to provide recommendations for appropriate structures, designs, and installation of planned road/stream crossings with regard to concerns for fish, fish migration, and fish habitat.

2.0 STUDY AREA

2.1 Location

The Tanglechain Integrated Resource Management (IRM) Unit is located in north-central British Columbia (Figure 1), and forms part of the Morice Forest District (Prince Rupert Forest Region). The main drainage in the Tanglechain IRM Unit is the Fulton River, which drains into Babine Lake. The study area for this project focused around proposed harvest in CP 416 in the moist-cold subzone of the sub-boreal spruce biogeoclimatic zone (SBS mc²) (MoF 1988). Streams potentially impacted by harvest in the area drain to Doris Lake, and then via Tanglechain Creek into the Fulton River.

2.2 Access

All of the stream survey sites were accessed by road and on foot. The area can be accessed from the Granisle Highway (connecting the village of Granisle to Topley), or the Babine Lake Road to 42 km. A road runs along the northern shore of Fulton Lake and joins the

Babine Lake Road at 42 km. This road can also be accessed from the Granisle Highway between Topley Landing and the village of Granisle.

Figure 1. 1:250,000 NTS map (93 L) indicating the general location of the study area.

2.3 Resource Use

The study area within the Tanglechain IRM Unit is utilized for forestry purposes, with active logging being proposed for the next 3 years in the immediate study area. No range use plans or range permits were noted for the study area, and a Land Use Planning Document was not available at the time of writing. The Tanglechain IRM Unit has some recreational value, including snow mobiling, a BC Forest Service (BCFS) recreation trail and cross country skiing near the village of Granisle, a BCFS Recreation Site located at the Bear Island View Point Trail (about 6 km north of the village of Granisle), and a BCFS Recreation Site located approximately 15 km north of the village of Granisle. Also, BCFS Recreation Sites are present at Tanglechain Lake, Doris Lake, and Pine Tree Lake (MOF Morice Forest District Recreation Maps 1994). No Protected Areas Strategy (PAS) sites have been identified in the Tanglechain IRM Unit. The Lake Babine Nation has “claimed” parts of the Tanglechain IRM Unit, but no settlements were in process at the time of writing. There are no mineral tenures, placer stakes or coal licences in the study area, however, a mineral tenure was noted adjacent to the Tanglechain area inventoried. The Mineral Tenure is located on NTS map 93L/16W, Mineral Tenure “Cart 1” (240207 or old # 10006), and is located on the west side of CP 435-1 (Files at Ministry of Energy, Mines and Petroleum Resources, updated Feb. 6, 1996). Guide and outfitter territories in the study area is 608G003. Trapline territories relevant to the study is 608T012.

The B.C. Environment Water Management Branch was contacted to document water licences and water rights for the study area. Two water licences exist for the Fulton River (both for Department of Fisheries and Oceans). No community watersheds are located in the Tanglechain IRM Unit (Meredith pers.com.).

3.0 METHODS

3.1 Literature Review

All pertinent literature on the streams inventoried in this project were collected and summarized. Existing data pertaining to stream classification in the Fisheries Information Summary System (FISS), and rivers and lakes files at the B.C. Environment Office (Skeena Region) were summarized and mapped. The information of concern pertained primarily to fish distribution. Existing watershed codes were assigned to streams. For streams where no watershed codes exist, codes were generated following guidelines in “A guide to the hierarchical watershed coding system for British Columbia”. Interim Locational Points (ILP) were assigned, following RIC standards (RIC fish and fish habitat inventory 1997). UTM's at the mouth of each stream were determined from the watershed code dictionary or from 1:50,000 or 1:20,000 maps. Stream order was determined from 1:20,000 TRIM maps.

3.2 Reach Break Identification

Reach breaks were tentatively identified and mapped by examining 1:20,000 TRIM maps, and air photographs (approx. 1:16,000). The identification of reach breaks followed RIC standards. Reach breaks were confirmed in the field, when feasible. Reaches are numbered from the mouth of the stream in ascending order. Where the number of reaches from the mouth was not determined, reaches were identified alphabetically in ascending order up the stream.

3.3 Stream Assessment

All sites were accessible by road and on foot. No helicopter access was required. Sections of streams identified as requiring re-sampling in the fall of 1996 (SKR 1997) were re-visited. Fish sampling was conducted at these sites to determine seasonal presence of fish. All fish sampling was conducted with a Smith Root Model 15C backpack electroshocker. An area of approximately 100 m² was sampled by electroshocking, and fish captured were identified to species, measured (fork length) and released. Potential or known barriers to fish migration, sensitive sites, and critical fish habitat were identified and mapped, when possible. A photographic record was taken for sample locations, barriers to fish migration, and other points of interest. All field data was entered into an MsAccess database, and photographs were compiled in a photodocumentation document.

3.4 Map Production

All sample sites, fish distribution and reach breaks were hand drawn onto existing 1:20,000 maps for future mapping by Western Geographic Ltd. The following is indicated on all maps: watershed codes, reach breaks and reach numbers, sample sites, stream classifications, and fish distribution. Codes for fish species present follow those outlined in FISS, and are indicated on applicable maps.

4.0 RESULTS AND DISCUSSION

The results section describes the streams surveyed to the reach level. General information for relevant mainstems and tributaries are summarized, followed by a more detailed description for each reach inventoried. Reach descriptions include recommended stream, wetland and/or lake classifications (identified following the FPC standards), comments describing fish habitat types and fish captured at the sites sampled, and recommendations for proposed stream/road crossings and riparian management. Recommendations for riparian management generally fall into one of three types:

1. No additional recommendations are made in cases when FPC standards for riparian management are expected to provide adequate protection to fish and fish habitat.

2. Recommendations for riparian management are provided in cases where FPC standards appear to provide insufficient protection of fish habitat based on
 - reach characteristics, including stream gradient, stream substrate, bank material, and surrounding topography (e.g. wetland, sideslope, valley:channel ratio),
 - fisheries resources in immediate and downstream reaches and/or mainstems,
 - influences of riparian vegetation on fish habitat (e.g. nutrients, LOD, stream temperature, bank stability),
 - potential flood conditions, and
 - forest type and values within riparian reserve and management zones.

3. Recommendations with explanations for S6 classification of streams with S4 default classification under FPC standards. This is exemplified at reaches where:
 - a definite barrier to fish migration exists with no available habitat for resident fish populations upstream (e.g. no potential spawning habitat above barrier or channel width of less than 1.5 m in the Central Interior Region), or
 - a single season's sampling in good fish habitats, and good sampling conditions confirms fish absence above definite barriers to fish migration, or
 - a single season's sampling in available habitat confirms fish absence above a potential barrier in a reach that contains limited fish habitat, or
 - no potential fish habitat was identified in the reach, and no valuable fish habitat is present upstream (e.g. no well defined channel).

Note: various levels of forest retention in riparian management zones are commonly recommended for these S6 streams to protect downstream fisheries values,

Completed stream survey cards (1996 and 1997 sites) and sample site photographs (1997 sites only) are located in Appendix 1. A stream classification map with study site/NID numbers is included in Appendix 2.

Note: Only fisheries values are taken into consideration when recommending special riparian reserve management zones. Other ecological contexts or wildlife values were not considered in this study, and are thus not reflected on in the results, discussions, or recommendations.

4.1 Tanglechain Creek Tributary

Watershed code: 480-6972-334
Date surveyed: Sept. 18, 1996; July 12, 1997

Tanglechain Creek forms a major tributary to Fulton River, and drains into the Fulton River approximately 6.5 km upstream of Fulton Lake. Tanglechain Creek drains a series of small to moderate sized lakes. The four lower lakes are Tanglechain Lake, Doris Lake, Boomerang Lake, and Pine Lake.

The presence of cutthroat trout (*Oncorhynchus clarki*), rainbow trout (*Oncorhynchus mykiss*), mountain whitefish (*Prosopium williamsoni*), and lake trout (*Salvelinus namayacush*) in Tanglechain Creek has been documented (FISS). In addition to these species, Tanglechain Lake is known to contain Dolly Varden (*Salvelinus malma*; could be bull trout (*S. confluentus*)), peamouth chub (*Mylocheilus caurinus*), largescale suckers (*Catostomus macrocheilus*), longnose suckers (*Catostomus catostomus*), and northern squawfish (*Ptychocheilus oregonensis*). Doris Lake is known to have lake whitefish, peamouth chub, rainbow trout, lake trout (*Salvelinus namayacush*), mountain whitefish, cutthroat trout, largescale suckers, longnose suckers, redbreast shiners (*Richardsonius balteatus*), burbot (*Lota lota*) and northern squawfish. Longnose suckers, peamouth chub, redbreast shiners and cutthroat trout have also been documented in Boomerang Lake. Prickly sculpin (*Cottus asper*), peamouth chub, redbreast shiners, northern squawfish, cutthroat trout, rainbow trout and longnose suckers have been found in Pine Lake.

Sampling has previously been conducted in Unnamed Creek (480-6972-334-544), and resulted in the capture of juvenile cutthroat trout upstream of Doris Lake. This population may be lacustrine-adfluvial, as indicated by the proximity of juvenile cutthroat trout to Doris Lake. The populations may migrate from Doris Lake to utilize Unnamed Creek (480-6972-334-544) for spawning and rearing.

4.1.1 Unnamed Creek (480-6972-334-544)

Watershed Code: 480-6972-334-544
Map # / ILP #: 93L098 / N.A.
UTM (at mouth): 9.6091892.65644
Length surveyed: 1545 m
Estimated number of reaches: not determined
Number of reaches examined: 2

This stream is an unnamed inlet to Doris Lake. The stream is located to the north of CP 416.

Reach 1

NID # / NID Map #:	02104 / 93L098	Site #:	3
Length of Reach:	1205 m	Stream Order:	2
Length surveyed:	1205 m	Channel Width:	2.43 m

Gradient: 2%

Initial sampling: Sept. 18, 1996
Re-sampling: not re-sampled
Fish presence: cutthroat trout

Reach Classification: S3
Recommended Reach Classification: **S3**

This reach was sampled approximately 10 m downstream of the confluence with Unnamed Creek 480-6972-334-544-AA1. One juvenile cutthroat trout was captured in 160 s. of electroshocking. Some fish rearing and spawning habitat was noted for this reach.

Reach 3

NID # / NID Map #:	02015 / 93L098	Site #:	1
NID # / NID Map #:	02012 / 93L098	Site #:	2
NID # / NID Map #:	02011 / 93L098	Site #:	3
Length of Reach:	not evaluated	Stream Order:	1/2
Length surveyed:	320 m	Channel Width:	0.9-1.2 m
		Gradient:	1-3%

Initial sampling: Sept. 18, 1996
Re-sampling: July 12, 1997
Fish presence: none in two seasons

Reach Classification: S6
Recommended Reach Classification: **S6**

Water depth and discharge was insufficient to conduct electroshocking in this reach during the initial sampling on Sept. 18, 1996. Electroshocking for 300 s. (60 m² of habitat) on July 12, 1997 at the site established in 1996, did not result in the capture or observation of any fish. Electroshocking for 300 s. (60 m² of habitat) downstream of this site also did not result in the capture of any fish. No electroshocking was conducted at the third sample site.

This reach can be classified S6 due to lack of fish in two seasons.

4.1.1.1 Unnamed Creek (ILP 02008)

Watershed Code: 480-6972-334-544-AA1
Map # / ILP #: 93L098 / 02008
UTM (at mouth): 9.692383.645784
Length surveyed: 1030 m
Estimated number of reaches: 4

Number of reaches examined: 3

This stream drains into the unnamed inlet stream to Doris Lake approximately 210 m upstream of Doris Lake. This creek is not located exactly as shown on 1:20,000 TRIM maps.

Reach 1

NID # / NID Map #:	02014 / 93L098	Site #:	5
Length of Reach:	150 m	Stream Order:	1
Length surveyed:	150 m	Channel Width:	1.0 m
		Gradient:	9%

Initial sampling:	June 13, 1997
Re-sampling:	N.A
Fish presence:	none captured

Reach Classification:	S4
Recommended Reach Classification:	S4

This reach was not sampled in 1996. Good fish rearing habitat and some potential spawning habitat was identified in this reach on June 13, 1997. Electroshocking for 380 s. in 90 m² of habitat did not result in the capture or observation of any fish. Three, 3-5 m long stretches of underground flow within the first 100 m upstream of the mainstem were noted in June 1997, despite the medium to high flood stage of the creek. These stretches of stream likely form barriers to fish migration.

Reach 2

NID # / NID Map #:	- / -	Site #:	-
Length of Reach:		Stream Order:	1
Length surveyed:	260 m	Channel Width:	
		Gradient:	

Initial sampling:	not sampled
Fish presence:	unknown; possible barrier to fish migration downstream

Reach Classification:	S4
Recommended Reach Classification:	S4

A reach break (between reaches 2 and 3) was identified approximately 410 m upstream from the mainstem. This reach break was not identified during previous ground surveys of the area in 1996. It appears that a major tributary not mapped on the 1:20,000 or 1:5,000 scale drains into ILP 02008 from the southwest at the reach break. This tributary adds a majority of flow.

The reach is located in a small gully, and has a defined channel. No sample site was established in this reach, and the reach should be classified S4 until re-sampling in reach 1 in the fall confirms the lack of seasonal fish use.

Reach 3

NID # / NID Map #:	02106 / 93L098	Site #:	4
NID # / NID Map #:	02016 / 93L098	Site #:	1
Length of Reach:	600 m	Stream Order:	1
Length surveyed:	600 m	Channel Width:	0.65; not well defined
		Gradient:	2-17 %

Initial sampling: Sept. 18, 1996
Re-sampling: June 12, 1997
Fish presence: unknown; possible barrier to fish migration downstream

Reach Classification: S6
Recommended Reach Classification: S6

A section of undefined channel downstream of the road crossing was identified as a barrier to fish migration in 1996. One sample site was established in 1996 (site 4), and no electroshocking was conducted at the road crossing due to the low discharge at the time. An additional sample site was established in 1997 (site 1), approximately 50 m downstream of the road crossing. No electroshocking was conducted since the reach lacked a well defined channel at the time of survey, and the surrounding forested area was flooded in some locations.

Reach 4

NID # / NID Map #:	02105 / 93L098	Site #:	2
Length of Reach:		Stream Order:	1
Length surveyed:	80 m	Channel Width:	0.7
		Gradient:	17 %

Date of sampling: June 12, 1997
Fish presence: unknown; possible barrier to fish migration downstream

Reach Classification: S6
Recommended Reach Classification: S6

A 15 m long section of underground flow was noted approximately 75 m upstream of the lower reach break. Some good trout rearing and potential spawning habitat was identified at this reach. No fish sampling was conducted since reach 3 has been identified as a likely barrier to fish migration.

4.1.1.2 Unnamed Creek (ILP 02007)

Watershed Code: 480-6972-334-544-BB1
Map # / ILP #: 93L098 / 02007
UTM (at mouth): 9.54795.6092700
Length surveyed: 650 m
Estimated number of reaches: 2
Number of reaches examined: 1

This stream drains into the unnamed inlet stream to Doris Lake. This creek is not indicated in 1:20,000 TRIM maps, and was not surveyed in 1996.

Reach 1

NID # / NID Map #:	02013 / 93L098	Site #:	4
Length of Reach:	650 m	Stream Order:	1
Length surveyed:	650 m	Channel Width:	0.6 m
		Gradient:	3.0%

Initial sampling: June 12, 1997

Reach Classification: S4 default
Recommended Reach Classification: **S6**

The lower section of the creek exhibits some underground flow, which are likely barriers to fish migration. Some fish rearing habitat, and no potential spawning habitat was identified in this stream. Electroshocking for 320 s. did not result in the capture of any fish.

S6 classification is recommended due to the presence of barriers to fish migration. Partial retention is recommended to minimize the likelihood of increases in water temperatures and sedimentation.

5.0 SUMMARY OF RECOMMENDATIONS FOR STREAM RESAMPLING

5.1 CP 416-4 and CP 416-17

Unnamed Creek (ILP 02008)

Refer to Report Section:	4.1.1.1	Reach /	1 / 5
		Site:	
NID #:	02014	NID map #:	93 L 098

No fish were captured in this reach in one season of sampling. Several 3 - 5 m long sections of underground flow within 100 m upstream of the mainstem may be barriers to fish migration. Re-sampling in a second season may allow for a change in stream classification from S4 to S6 for this reach, and reaches located upstream.

6.0 REFERENCES

- B.C. Environment. Fish and Wildlife Branch. November 1996. pers. com. Guide outfitters, trap line operators, stream and lake files.
- B.C. Environment. Environmental Protection Branch. January 1997. pers. com. Water quality information.
- Department of Fisheries and Oceans. November 1996. pers. com. Salmon Escapement data for streams in the Babine watershed.
- Fisheries Inventory Summary System. 1996. Maps located at BC Environment office, Skeena Region, Smithers, B.C.. (cited as FISS).
- Meredith, D. B.C. Environment. Water Management Branch. November 1996. pers. com. Water licence and community watershed information.
- Ministry of Energy, Mines and Petroleum Resources. 1996. Coal licence, placer stakes and mineral tenure files.
- Ministry of Forests. 1994. Morice Forest District Recreation Map.
- Ministry of Forests. 1988. Biogeoclimatic and ecoregion units of the Prince Rupert Forest Region.
- Resource Inventory Committee. 1996. Reconnaissance Fish and Fish Habitat Inventory.
- Resource Inventory Committee. 1997. Reconnaissance Fish and Fish Habitat Inventory.
- SKR Consultants Ltd. 1997. Aquatic Stream Inventory: Operational Stream Inventory in the Tanglechain IRM Unit. unpubl. mscrpt. prepared for Houston Forest Products Ltd.

APPENDIX 1 - SITE CARDS

Site cards for all streams inventoried and/or re-sampled in 1996 or 1997 relevant to cutting permit CP 416.

Unnamed Creek (480-6972-334-544) - Reach 1

Mark - insert last year's card here

Unnamed Creek (480-6972-334-544) - Reach 3

Mark - insert card from last year; change reach number from reach 2 to reach 3

Unnamed Creek (480-6972-334-544) - Reach 3

Plate 1. Reach 3 - sample site 2. Upstream view (above) and downstream view (below).

Unnamed Creek (480-6792-334-544) - Reach 3

Plate 2. Reach 3 - sample site 3. Upstream view (above) and downstream view (below).

Unnamed Creek (ILP 02008; ILP map 93L098) - Reach 1

Plate 3. Reach 1 - sample site 5. 40 cm falls and 4 meter section of underground flow approximately 25 m upstream of the mainstem (above - left), upstream view (above - right) and downstream view (below) of sample site.

Unnamed Creek (ILP 2008; ILP map 93L098) - Reach 3

Plate 4. Reach 3 - sample site 1. Upstream view (above) and downstream view (below).

Unnamed Creek (ILP 02008; ILP map 93L098) - Reach 4

Plate 5. Reach 4 - sample site 2. Upstream view (above) and downstream view (below).

Unnamed Creek (ILP 02007; ILP map 93L098) - Reach 1

Plate 6. Reach 1 - sample site 4. Upstream view (above) and downstream view (below).

APPENDIX 2 - 1:20,000 TRIM MAPS

1 map (93L098) illustrating the reach breaks, sampling sites with NIDs, ILPs and stream classification for applicable watersheds